

ENTOMOLOGY.—*Descriptions and notes on two rare species of Aphididae.* F. C. HOTTES. (Communicated by Herbert Friedmann.)

Opportunity is taken to describe some forms heretofore unknown of two rare species of Aphididae, and to record some notes on their life habits.

*Rhopalosiphum grabhami* Cockerell

This species was described by T. D. A. Cockerell in 1903. Since that time I am aware of its mention in aphid literature only once, by Gillette and Palmer in 1932. In the fall of 1951 it was present in numbers in pseudogalls made by rolling both halves of the leaf blade toward the midrib. On *Lonicera involucrata* the galls thus formed were red, mottled with yellow. The edges of the leaves were tightly rolled into tubes just large enough for the bodies of the aphids. In such tubes numerous aphids apparently adult, but with undeveloped wings were taken dead, killed by a fungus. Toward the midrib the leaves were more loosely rolled, and it was in these regions that living alate viviparous females and males were taken. Oviparous females were not taken. The male has not been described before.

ALATE MALE

*Size and general color.*—In life very much shriveled and shrunken; general color black. Mounted specimens, relaxed and cleared, are about 1.45 mm long from vertex to tip of anal plate; width across eyes, 57 mm. Mounted specimens show the head and thorax blackish brown, abdomen with dusky spots at the sides, and smaller spots, irregular in shape and size, arranged in transverse rows across the dorsum. The median spots are larger and more or less confluent, near the posterior; cauda and anal plate dusky; cornicles dark dusky; antennae uniform black; tibiae dark brown with apical portions darker.

*Head and appendages.*—Comparative lengths of antennal segments as follows: III, .57 mm; IV, .37 mm; V, .31 mm; VI, .11 + .52 mm. Antennal hair slightly knobbed, that on III not so long as width of segment. Secondary sensoria round, tuberculate, arranged as follows: III, 56–60 evenly distributed over surface; IV, 33 evenly distributed; V, 5–11 more or less in a row. All antennal segments imbricated. Primary sensoria on V and VI with a hair rim. Anterior margin of head with a strongly developed me-

dian tubercle. Antennal tubercles extremely well developed. Rostrum very short, extending only about midway to mesothoracic coxae, segment before apex very bulbous.

*Thorax.*—Veins of forewings dark dusky brown; second branch of media about midway between first and margin of wing; radial sector much bowed; hind tibiae 1.07 mm long; hair on inner surface of hind tibiae more abundant than that on outer surface; hair on both surfaces equal in texture and about equal in length. The hair on the proximal surface of the tibiae is shortest, length of hair in midregion less than width of tibiae; apex of tibiae somewhat enlarged. Tarsi .08 mm long. First segment of tarsus deeply recessed within tibiae, this is also true of alate viviparous females. First segment of tarsus apparently with only two hairs.

*Abdomen.*—Cornicles .20 mm long, with surface imbricated, sides almost uniformly swollen, slightly constricted just before well-developed rim. Cauda, .057 mm long, with three hairs on a side. Anal plate with few long hairs. Gonapophyses short with numerous hair.

*Allotype alate male.*—Collected September 7, 1951, Skyway, Colo. (Cottonwood Lake Trail) deposited in United States National Museum.

I am not sure that this species is correctly placed in the genus *Rhopalosiphum*. It has much in common with the *Myzini*.

*Lachnus montanus* (Wilson)

This species was described by Wilson in 1919 from three "apterous viviparous" females collected by Gillette at Cimmaron, Colo. in 1906. I am not aware of other specimens having been recorded in aphid literature since that time. Dr. Knowlton, however, has sent me an unidentified slide of this species to determine, collected by B. A. Hows at Vallecitos New Mexico in 1943. The host is not recorded; the specimens are apterous.

This species is of especial interest because two kinds of apterous viviparous females occur; females with no sensoria on the hind tibiae and females with sensoria on the hind tibiae. It was from females of the latter type that Wilson described the species. At the time he stated that it was possible for the females to be oviparous, a possibility he promptly rejected because the

specimens were collected in August which he thought too early to produce oviparous females. Despite the presence of sensoria on the hind tibiae, a characteristic as a rule of oviparous females, but not confined to them, such females are viviparous. I can not state that they are always thus, but my material so indicates. They seem to occur in the fall as a generation just preceding the oviparous generation. Because they differ in other respects in addition to the presence of sensoria on the hind tibiae they must be regarded as distinct forms. I have been informed by Professor Palmer, that Professor Essig has a paper in press in which he calls similar forms produced in another genus "intermediates" and I make use of his term. It was my intention to call them pseudo-oviparous.

I took all my specimens in a small region south of Glade Park, Colo. (Piñon Mesa), on scrub oak (*Quercus gunnisonii*). On the larger trees of this species they apparently live singly, of in the case of immature specimens in groups of two or three. I have taken them on the twigs, branches, and trunk. On twigs they seem to show a preference for regions near twig galls, and in one case I collected a female with the head and a portion of the thorax in the cavity of a gall, too small to admit the entire body. On branches and on the trunk, rough regions seem preferable. Even when directed to them by ants, collecting of this species is slow and tedious. By actual count only five mature specimens were taken in three afternoons collecting, on mature trees. Quite by accident I chanced to stop to examine some small seedlings not more than 3 feet high and found that they had fairly large colonies of oviparous females and males on the trunks, not more than a foot from the ground. If this represents the normal preference for this species, perhaps it explains why this species is so rare in aphid collections.

#### APTEROUS MALE

*Size and general color.*—In life black, very insignificant looking, being much shrunken and very shriveled. Mounted specimens, after clearing and relaxing, vary in length from 2.07 to 2.50 mm. Mounted specimens have the head and thorax dusky brown, abdomen greenish with large lateral dusky areas; dorsum of abdomen with many dusky spots, which vary greatly in size and shape. Posterior region of abdomen dusky; cornicles dusky; antennae with the ex-

ception of the base of third dark dusky brown; femora brown at base shading to almost black; tibiae and tarsi uniform dark brownish black.

*Head and appendages.*—Width of head across eyes .715-.78 mm. Anterior margin of head rather flat with numerous long hair; median suture present; first and second antennal segments with numerous short, rather thick hair. All antennal segments imbricated; hair on antennal segment III, IV, and V spinelike and for the most part about as long as width of segment. Secondary sensoria distributed as follows: III, 10-39; IV, 0-2; V, 1-6. The specimen that had the fewest sensoria on III had the most on V. Marginal sensoria on VI far removed from primary, rather large, sometimes difficult to determine, most commonly three. Proportional lengths of antennal segments as follows: III, .715-.815 mm; IV, .314-.371 mm; V, .30-.343 mm; VI, .143 + .085-.185 + .128 mm. The unguis is outstandingly long and thick. Ocular tubercles present, well developed. The rostrum reaches almost to the cornicles.

*Thorax and abdomen.*—The hind tibiae measure 2.28-2.41 mm in length. The hind tarsi are .347 mm long. The hair on the hind tibiae is about equally well developed on all surfaces, in length it is subequal to the width of segment. The ventral surface of the first segment of the hind tarsus has about 15 hairs, the dorsal surface 3. The cornicles measure .171-.214 mm at the base, which is rather irregular in outline. The cauda and anal plate are rounded. The hair on these structures and on the cornicles is longer than that found on other parts of the body. The gonapophyses have what appear to be tufts of hair at their ends.

#### APTEROUS VIVIPAROUS FEMALE

*Size and general color.*—Length varying from 3.50 to 3.78 mm. Immature specimens of this species are so large that they may be taken for adults in the field. Body highly arched and much inflated except in regions of spots which appear deeply pitted. Color of head and thorax light brown with a very scant amount of pulverulent matter. Abdomen the color of cocoa with a rather thick hoar-frost pulverulence covering all but the cornicles, which are dark brown, very small lateral tubercles and areas which surround them, which are also brown, and small rather deeply pitted areas arranged in four rows on the dorsolateral surface of the abdomen.

These areas, which appear to be glandular, are most likely not wax glands, being free from pulverulent matter. First and second antennal segments slightly darker than the head, third segment yellowish brown at base shading to dark dusky brown, remaining antennal segments dusky; femora brownish at base shading to very dark dusky brown if not black; tibiae almost uniform brownish black, tarsi the same. Mounted specimens may show dusky areas on dorsum of abdomen. When present, these are irregular in outline and variable in size.

*Head and appendages.*—Width of head across eyes .57 mm; antennal segments with the following proportional lengths: III, .71-.78 mm; IV, .30-.314 mm; V, .314-.347 mm; VI, .157-.171 + .114 mm. The unguis is very long and thick. The secondary sensoria are distributed as follows: III, none; IV, 0-2; V, 0; marginal sensoria on VI far removed from primary; first and second antennal segments with more hair than usual; antennal hair spinelike, not so long as width of segment; antennal segments imbricated; primary sensoria free from hair ring; rostrum nearly reaching to base of cornicles; ocular tubercles poorly developed; head with a median suture, which continues more or less on the segments of the thorax, never being complete on any one segment.

*Thorax.*—The metathoracic femora are much longer than those of the prothorax and mesothorax, measuring 1.64 mm in length; the hind tibiae are 2.86 mm long; the hind tarsi measure .34 mm in length. The hair on the tibiae are spinelike and arise from clear areas which stand out from the otherwise very dark color of the tibiae; hair on tibiae not as long as width of tibiae, not all of uniform length, longest hair dull at the tip; first segment of hind tarsi with nine hairs on ventral surface and three on dorsal.

*Abdomen.*—Cornicles with base varying from .257 to .286 mm; base very irregular in outline with about four rows of hair; abdomen with much hair; cauda narrow but deep, with two kinds of hair: long spinelike hair on the margin and short fine hair on the dorsum. Anal plate rounded.

#### INTERMEDIATE VIVIPAROUS FEMALE

It was this form that Wilson described. Specimens of this form resemble the viviparous females just described in color. They differ from such females in size, varying from 3.78 to 4.00

mm, in length of sixth antennal segment, which is shorter, .128 + .08 mm; the unguis is different in shape, not being so thick or so blunt.

The hind femora are much shorter, 1.35-1.43 mm, as are also the hind tibiae, 2.28-2.59 mm. The tarsi are also shorter, those of the metathorax measuring only .228 mm.; antennal segments III, IV, and V vary within the limits of those of the true apterous viviparous female. The sensoria on the antennae are also similar; sensoria on the hind tibiae are similar to those of the oviparous female; the cornicles have a wider base.

#### OVIPAROUS FEMALE

*Size and general color.*—Length from vertex to tip of anal plate 3.2-3.64 mm. Color much the same as that of apterous viviparous female. However, some specimens are more black than brown, and such lack pulverulence and have a dull appearance due to abundant hair. The head and prothorax of black specimens are often light brown; the body is not highly arched.

*Head and appendages.*—Ocular tubercles poorly developed; width across eyes .78-.85 mm; antennal segments with the following proportional lengths: III, .74-.85 mm; IV, .257-.286 mm; V, .57-.386 mm; VI, .157 + .085 mm or .158 + .128 mm; unguis not so thick as that of apterous viviparous female; rostrum not reaching cornicles, median suture on head and thorax similar to females described; secondary sensoria distributed as follows: III, 0; IV, 0-1; V, 0-2; when present small.

*Thorax.*—Hind femora long, 1.57-1.78 mm; metathoracic tibiae, 2.71-2.84 mm; hind tibiae not disfigured by sensoria; sensoria not limited to upper half but few are present below the middle. The sensoria are irregular in shape and size, rather abundant, and hardly tuberculate. They are sometimes very difficult to determine because of the dark color of the tibiae. The hind tarsi are .328-.347 mm long.

*Abdomen.*—Base of cornicles measuring from .286 to .371 mm; posterior portion of abdomen not drawn out.

*Types.*—Allotype apterous male, taken October 12, 1951. Morphotype apterous viviparous female, taken September 16, 1951 (no sensoria on tibiae). Morphotype apterous oviparous female, taken October 12, 1951. All types deposited in the United States National Museum.